

Effects of Music Therapy on Anxiety, Pain and Vital Signs in Patients Receiving Mechanical Ventilator Support

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CONFLICT OF INTEREST

None

Abstract

Objective: This study was carried out to investigate the effect of therapy through the music enjoyed by the patients with mechanical ventilation support in intensive care unit on their pain, anxiety and vital signs. **Material and Methods:** The study was conducted with 62 patients with ventilation support in the anesthesia and reanimation intensive care clinic of an education and research hospital. The patients were divided into two groups as the control and the treatment group. During the application, the patients listened to music for 60 minutes. **Results:** Significant changes were found in the anxiety and pain values of the treatment group patients as a result of the music therapy in the 30th, 60th minutes of the therapy and 30 minutes after the completion of the therapy and significant changes were observed in the systolic and diastolic blood pressure values and respiratory rates measured at different time intervals of the treatment group patients ($p < 0.05$). Moreover, significant changes were found in the systolic blood pressure and respiratory rate in the 60th minute. **Conclusion:** Therapy with music enjoyed by patients with mechanically-ventilated has positive effects on anxiety and pain management, blood pressure values, and respiration rate. Music therapy can be selected from patients' favorite music and used for therapeutic clinical applications.

Keywords: Mechanical Ventilation, Anxiety, Pain, Music Therapy, Nursing Care

INTRODUCTION

Intensive care units are units where many life-saving care and treatment methods are applied, requiring advanced technologies, knowledge, high performance and attention to detail. Many of the critical patients staying in intensive care units are in need of mechanical ventilation support

MVS [1]. Invasive and noninvasive interventions applied to patients with MVS lead to improvement in intensive care patients; yet, they also cause communication problems, sleep disturbances, feeling of isolation arising from loneliness, anxiety and pain in these patients [2]. When patients stay in intensive care units ICUs for more than 48 hours with MVS, they experience pain and anxiety together [3,4]. Pain and anxiety is a condition that must be absolutely prevented during the treatment of ICUs patients [5,6]. Medical treatments are mostly used in ICUs to relieve pain and anxiety [7]. Pain and anxiety is a condition that must be absolutely prevented during the treatment of ICUs patients. Providing the most comfortable care for the patients; not just the treatment, is the most important approach to be adopted by nurses working in ICUs [8]. As intensive care nurses are the team members spending the most time with patients and watch them closely, they have great responsibilities in the evaluation and reduction of pain and anxiety [3,5]. Excessive sedation and analgesia may result in many undesirable consequences such as increasing risk of ventilator-associated pneumonia, respiratory depression, prolonged MVS, early tracheostomy planning due to delay in healing, hypotension, perfusion deterioration, critical disease myopathy, delirium risk, immunosuppression, ileus, deep vein thrombosis, and the prolongation of hospitalization and stay in ICUs [9, 10]. Inadequate use of sedation may lead to problems such as deterioration in the comfort of the patient, sense of uneasiness and discomfort, intolerance to the endotracheal tube, hypertension and tachycardia due to increased sympathetic activity, increased oxygen consumption, fatigue, atelectasis and psychological trauma [10, 11]. With a quality nursing planning, non-pharmacological methods can reduce or eliminate the need for sedation [9]. Music therapy is accepted as a non-invasive nonpharmacologic method within nursing practices and it is as an aesthetic approach-based intervention method which enables patients to participate in their own care as they wish.

While Lee et al. [2017] describe music therapy MT as an important part of nursing discipline, Korhan, Khorshid and Uyar [2011] argue that the use of music therapy in practice will enrich nursing initiatives and practices. In the literature, it has been reported that MT increases patient satisfaction [11], reduces anxiety and pain levels [3,5]; decreases systolic and diastolic blood pressure [3,12,13], decreases pulse rate [3,14], respiration rate [3], significantly increases oxygen saturation SpO₂ level [15, 16].

In the literature, music played in MT studies with patients who are supported by mechanical ventilation is the music that is determined by the researchers [3, 13]. MT studies done by using patients' own favorite music have been mostly conducted with patients who are conscious [16]. There are also studies comparing the effect of MT conducted with the music chosen by the researcher and that of music therapy conducted with the music selected by patients themselves [18, 19]. It is stated that the music to be played to patients should be selected by considering the personality and cultural structures and health conditions of patients, that the selected music can have different effects on different patients, and that only the patient can decide which music will comfort or tense him/her. It is emphasized that it is important to consider the patient's wishes in order to maximize the effect of the music because the selection of inappropriate music for the patient can increase sensitivity to pain [20] Patients with MVS in ICUs are nursing dependent in personal care. Patients who are allowed to choose their favorite and preferred music are expected to contribute to their recovery by feeling that they have power in their care. Therefore, this study

was performed to investigate the effects of the therapy conducted with the music enjoyed by patients with MVS in ICUs on their pain, anxiety and vital signs.

MATERIALS AND METHODS

Type and Place of Study

The universe of the current study carried out as an experimental and single-blind randomized study to determine the effect of MT on the pain, anxiety and vital signs of patients hospitalized in the Anesthesia and Reanimation ICU in a training and research hospital located in the Aegean Region of Turkey between 01/5/2016 and 31/5/2017 is comprised of 442 patients with MVS.

Population and Sample of the Study

The sample of the study consists of patients who are with MVS, in the adult age group (18-85), with no neurological disease diagnosis, with no psychological disease diagnosis, with no sedation therapy, with no high dose inotropic support, with hemodynamic stability, with no hearing problem, with the same MVS, with Glaskow Coma Scale (GCS) score of 9 and above and with at least 24 hours of MVS. In the literature, it is stated that the size of the sample should be at least 30 subjects in intervention and control groups each for parametric measurements in experimental studies [21]. In the current study the sample is constituted by 62 patients for whom written consents were gained from their relatives. Of these 62 patients, 31 were assigned to the intervention group IG and 31 were assigned to the control group CG.

Data Collection Tools

Data of the study were collected, after receiving consent from the conscious patients themselves and from the relatives of the unconscious patients, by using the patient information form, patient monitoring form, faces anxiety scale and faces pain rating scale.

Patient Information Form: In the patient information form, there are a total of 9 items aiming to elicit whether the patient is in the control group or in the intervention group, the patient's diagnosis, age, gender, education level, marital status, the number of days in which the patient has been connected to the mechanic ventilator, GCS score, additional diseases and the number of days of staying in the ICU.

Patient Monitoring Form: In the patient monitoring form, the patient's hemodynamic values such as systolic SBP and diastolic blood pressure DBP, pulse rate PR, respiration rate RR, and SpO₂ values measured immediately before the MT started, in the 30th minute of the MT, 60th minute of the MT and 30 minutes after the MT ended (90th minute) are included. In addition, anxiety, pain facial expression scales were used in the same time frames and facial expression corresponding to anxiety and pain facial expressions were marked.

Faces Anxiety Scale: The faces anxiety scale was developed by McKinley et al. (2003) to determine whether intensive care unit patients are ready to be transferred to the service. There are five facial expressions in the scale. By looking at the patient's forehead, eyebrows, eyes and

lips, an idea about the anxiety of the patient is obtained; a score is assigned ranging from 1 point to 5 points in a direction that goes from positive to negative. Increasing score means increasing anxiety [22].

Faces Pain Rating Scale: The faces pain rating scale was developed by Wong and Baker (1988) for diagnosis of pain in children. The scale can also be used to evaluate impaired mental or speaking capacity. Each facial expression has corresponding statements that are “I have no pain, I have dull pain, I have moderate pain, I have much pain, I have intense pain and I have very intense pain”. The patient is asked to select the facial expression best describing his/her state of pain and depending on this selection, scoring is performed [23].

Selection of the Music to be Played to Patients

In the literature, it is stated that MT should not be used continuously in order to be an effective method, that 25-90 minute-music therapy is enough each day [24], using a slow and fluent music type with 60-80 beats per minute, which will have positive effects on relaxation and pain relief [11]. Heiderscheit, et al. [2014] state that for patients with MVS, family members can bring music that the patient already has as a part of his/her personal music collection. In this study, some family members brought MP3s consisting of the personal music collection of the patient individual, the music collection was examined by the music expert researcher and music that could be used for therapeutic purposes was selected. Appropriate music was chosen from the relatives of patients who do not have their own personal collection, by obtaining information about the music they love. The music lists were prepared for each individual. Designed to have a calming and relaxing effect by the music expert, MP3 consisted of Turkish folk music and popular music preferred by patients.

Application of the Music Therapy

SBP, DBP, PR, RR, SpO₂ values of the patients were measured and recorded and the faces anxiety scale and faces pain rating scales were administered to the patients immediately before starting the MT and the scores from these scales were calculated and recorded. Then, music was played for 60 minutes via the MPEG-1 Audio Layer III (MP3) player to the IG patients. In 30th minute of the MT, at the end of MT (in 60th minute) and finally 30 minutes after the completion of the MT (in the 90th minute), SBP, DBP, PR, RR, SpO₂ values of the patients and their scores from the faces anxiety scale and the faces pain rating were calculated and recorded. SBP, DBP, PR, RR, SpO₂ values and the faces anxiety scale and the faces pain rating scale scores of the CG patients were measured and recorded simultaneously with the patients in the IG. The faces anxiety scale and the faces pain rating scale were administered to both the CG and IG group patients by a nurse different from the nurse conducting the study immediately before the beginning of the MT in the 30th minute and 60th minute of the therapy and 30 minutes after the completion of the therapy.

Research Variables

SBP, DBP, PR, RR, SpO₂ values, the faces anxiety and the faces pain rating scales scores of the patients with MVS are the dependent variables. Age, gender, education level, diagnosis, the number of days spent with MVS and duration of stay in the ICU are independent variables.

Statistical Analysis

Shapiro Wilk test was used as normality test. Descriptive statistics were presented as mean, standard deviation or median (min-max) for continuous variables, frequency and percentage for categorical variables. Continuous variables were compared using Mann-Whitney U test and t-test. For responses at different time points, percent changes were calculated according to baseline measurement. Categorical variables were compared using Pearson's chi-squared test, Fisher's exact test and Fisher-Freeman-Halton test. A *p*-value <0.05 was considered as significant. Repeated measures ANOVA and Friedman tests were performed for within group comparison. Bonferroni test was also used for multiple comparisons. All statistical analyses were performed with IBM SPSS ver.23.0.

Ethical Considerations

Required written permissions were granted from the concerned institutions; the Clinical Investigations Ethics Committee (date: 03/03/2015, decision no: 01), the Department of Anesthesiology and Reanimation Clinic of the Training and Research Hospital and the Provincial Public Hospitals Association. The aim of the research was informed verbally and in writing to the relatives of the patients whose decision making ability was not sufficient; cooperation was established for the benefit of patients. Explanation to the patients about the procedure to be followed before the music therapy was made regardless of whether he/she was conscious or not.

RESULTS

Of the IG patients, 51.6% and of the CG patients, 67.7% are in the age group of 65-85. In both of the groups, 61.3% of the patients are males. Of IG patients, 77.4% and of the CG patients 83.9% are elementary school graduates. Of the IG patients, 77.4% and of the CG patients 67.7% are married. No statistically significant difference was found between the personal characteristics of the patients in the IG and CG (*p*>0.05) (Table 1).

Table 1 Comparison of the Socio-demographic Features of the IG and CG Patients

Variables	Intervention Group		Control Group		χ^2/ U test	p
	n	%	n	%		
Age						
23-43 years old	7	22.6	3	9.7	2.342	0.310
44-64 years old	8	25.8	7	22.6		
65-85 years old	16	51.6	21	67.7		
Gender						
Female	12	38.7%	12	38.7%	0.000	1.000
Male	19	61.3%	19	61.3%		
Education Level						
Elementary	24	77.4%	26	83.9%	0.413	0.520
Secondary or higher	7	22.6%	5	16.1%		
Marital Status						
Married	24	77.4%	21	67.7%	0.729	0.393
Single	7	22.6%	10	32.3%		
The number of days spent connected to mechanical ventilation						
1-7 days	18	58.1	25	80.6	3.718	0.054
8 days or more	13	41.9	6	19.4		
Glaskow Coma Scale						
9 points	10	32.3	10	32.3	0.000	1.000
10-12 points	21	67.7	21	37.7		

It is determined that 67.7% of the patients in the IG had respiratory and heart failure, 71% of the patients in the CG had medical diagnosis of respiratory and heart failure. There was no statistically significant difference between the patients in the IG and CG in terms of medical diagnosis ($p > 0.05$, $p = 0.885$) (Table 2).

Table 2 Comparison of the Pain and Anxiety Scores of the IG and CG Patients Taken in the 0th, 30th, 60th and 90th Minutes of the MT

Variables	Intervention Group median (min-maks)	Control Group median (min-maks)	p
MT 0.' Anxiety f	3 (2-4)	3 (2-4)	0.822
MT 30.' Anxiety f	-1 (-2-0)	0 (-1-1)	<0.001
MT 60.' Anxiety f	-1 (-2-0)	0 (-1-1)	<0.001
MT 90.' Anxiety f	-1 (-2-0)	0 (-2-1)	<0.001
MT 0.' Pain f	4 (2-6)	4 (2-8)	0.117
MT 30.' Pain f	-2 (-4-0)	0 (-2-2)	<0.001
MT 60.' Pain f	-2 (-6-0)	0 (-4-2)	<0.001
MT 90.' Pain f	-2 (-6-0)	0 (-4-2)	0.004

When the anxiety and pain scores of the IG and CG patients in the 0th, 30th, 60th and 90th minutes were compared, while no statistically significant difference was found in the 0th minute ($p>0.05$), statistically significant differences were found in the 30th, 60th and 90th minutes ($p<0.05$). The anxiety and pain scores of the IG patients decreased more than those of the CG patients in the 30th, 60th and 90th minutes (Table 3).

Table 3 Comparison of the Vital Signs of the IG and CG Patients Measured in the 0th, 30th, 60th and 90th Minutes of the MT

Variables	Intervention Group $\bar{X}\pm SS$	Control Group $\bar{X}\pm SS$	p
MT 0.'Systolic KB	127.10±26.96	116 (83;177)	0.551
MT 30.' Systolic KB yd	-0.02 (-0.15;0.51)	0.04 (-0.25;0.27)	0.039
MT 60.' Systolic KB yd	-0.06 (-0.22;0.2)	0.01 (-0.23;0.51)	0.025
MT 90.'Systolic KB yd	-0.02 (-0.23;0.43)	0.01 (-0.32;0.38)	0.172
MT 0.' Diastolic KB	64 (34;101)	60 (44;94)	0.434
MT 30.'Diastolic KB yd	0 (-0.31;0.44)	0.02 (-0.33;1.07)	0.084
MT 60.'Diastolic KB yd	-0.04 (-0.45;0.32)	0 (-0.37;0.41)	0.113
MT 90.' Diastolic KB yd	-0.01 (-0.18;0.38)	0 (-0.24;0.3)	0.593
MT 0.'Pulse	91.61±20.37	88.87±19.35	0.589
MT30.'Pulse yd	-0.03 (-0.23;0.46)	0.01 (-0.29;0.84)	0.394
MT60.'Pulse yd	-0.02 (-0.29;0.15)	0.01 (-0.3;0.81)	0.058
MT90.'Pulse yd	-0.01 (-0.28-0.13)	0 (-0.26;0.68)	0.593
MT0.' Respiration	18 (10;31)	18 (10;32)	0.511
MT30.'Respiration_yd	-0.06 (-0.54;0.33)	0 (-0.28;0.73)	0.147
MT60.'Respiration_yd	-0.13 (-0.57;0.06)	-0.05 (-0.5;0.2)	0.036
MT 90.'Respiration_yd	-0.06 (-0.57;0.67)	-0.04 (-0.53;0.64)	0.949
MT0.' Spo2	97 (88;100)	97 (92;100)	0.253
MT30.'Spo2_yd	0 (-0.03;0.08)	0 (-0.04;0.06)	0.239
MT 60.'Spo2_yd	0 (-0.04-0.11)	0 (-0.03;0.05)	0.777
MT_90.' Spo2_yd	0 (-0.08;0.08)	0 (-0.05;0.04)	0.597

yd: median (min-maks)

When the changes in the SBP and RRs of the IG and CG patients in the 0th, 30th, 60th and 90th minutes were examined, a statistically significant difference was observed in the 60th minute ($p=0.025$, $p=0.036$). The SBP of the IG patients decreased more than that of the CG patients in the 60th minute. When the two groups were compared in terms of DBP, pulse and SpO2, no statistically significant difference was found in the 0th, 30th, 60th and 90th minutes (Table 4).

Table 4. Time-dependent Comparison of the Measures Taken for the Intervention and Control Group Patients in the 0th, 30th, 60th and 90th Minutes of the Music Therapy

Variables	Intervention Group		Control Group	
	$\bar{X} \pm SS$	p	$\bar{X} \pm SS$	p
MT 0.' Systolic KB	127.10±26.97	0.035^a	123.19±24.23	0.842
MT 30.' Systolic KB	125.00±24.44		125.84±25.15	
MT 60.' Systolic KB	119.61±23.85		124.35±22.53	
MT 90.' Systolic KB	126.06±27.93		125.48±23.8	
MT 0.' Diastolic KB	64.74±16.01		0.012^a	
MT 30.' Diastolic KB	63.26±14.07	67.10±15.60		
MT 60.' Diastolic KB	60.65±14.73	62.87±13.32		
MT 90.' Diastolic KB	65.00±15.56	62.23±16.32		
MT 0.' Pulse	91.61±20.37	0.106		88.87±19.35
MT 30.' Pulse	90.26±21.93		88.65±19.56	
MT 60.' Pulse	87.61±19.47		89.94±20.21	
MT 90.' Pulse	88.87±19.94		89.26±19.34	
MT 0.' Respiration	18.45±5.97	<0.001^b	17.45±5.51	0.027^a
MT 30.' Respiration	15.71±3.92		16.52±4.43	
MT 60.' Respiration	14.39±3.61		15.39±3.70	
MT 90.' Respiration	17.23±5.20		16.29±4.64	
MT 0.' Spo2	96.74±2.65	0.112	96.26±2.31	0.944
MT 30.' Spo2	97.19±2.27		96.26±2.58	
MT 60.' Spo2	97.42±2.53		96.65±2.30	
MT 90.' Spo2	96.65±2.87		96.35±1.92	
a: Significant difference between 0 th and 60 th minutes				
b: Significant differences between 0 th vs. 30 th , 0 th vs. 60 th , 30 th vs. 60 th , 60 th vs. 90 th				

Time-dependent within-group changes in the SBP, DBP, PR, RR and SpO2 values of the IG and CG patients were examined. For the IG patients, significant differences were found for SBP and

DBP values between the 0th minute and 60th minute ($p=0.035$, $p=0.012$) as these values decreased significantly from the 0th minute to the 60th minute. There were no statistically significant differences between the time-dependent SBP, DBP, PR, RR and SpO₂ measurements in the CG ($p > 0.05$). While RRs decreased in the IG up to the 60th minute ($p=0.001$), they started to increase in the 90th minute. For the CG, a statistically significant difference was only found between the 0th and 60th minutes, the rate of respiration decreased in the 60th minute (Table 5).

Table 5 Distribution of patients in the IG and CG according to their medical diagnoses

Medical diagnosis of patients	IG		CG		<i>p</i>
	n	%	n	%	
Aortic rupture	1	3.2	2	6.5	
Respiratory and heart failure	21	67.7	22	71.0	0.885
Cancer	3	9.7	2	6.5	
Operate the abdomen	6	19.4	5	16.0	
Total	31	100	31	100	

There was no statistically significant difference between SBP, DBP, PR and RR according to the music types listened in IG in the study ($p > 0.05$).

DISCUSSION

The use of MT is a natural, inexpensive initiative, has no side effects, and has an effective role in physical, psychological, social, emotional and spiritual healing [2,4,25]. Therefore, it is important to combine MT with pharmacological methods in the management of pain and anxiety in intensive care patients. Much of the work on MT focuses mostly on the influence of music. Information about the types of music used in such work is generally limited. Though there are studies investigating the therapeutic effects of different types of music [2,3,16], most of these studies have been conducted with the music selected by the researcher. Heiderscheit et al. [2014] argued that musical preferences of the patients with MVS should be taken into account in order for them to be active in their care. The most important effect of MT is that significant correlations emerged between the degree to which the patient enjoys the music and the degree of relaxing, not thinking pain and worse conditions [24]. In the current study the music enjoyed by the patients in the IG was played to them for 60 minutes. The effects of this MT on the patients’ pain, anxiety and vital signs were evaluated.

Depression, anxiety, and delirium were observed in 80% of patients with MVS [8]. The power of the nurse, who observes the patient for 24 hours a day and is able to realize the slightest changes immediately, is an undeniable reality and it is an important task for nurses to prevent the complications that may occur in patients [3]. When the changes occurring in the anxiety scores of the IG students and the CG students in the 0th, 30th, 60th and 90th minutes were compared, while no statistically significant difference was found in the 0th minute, statistically significant differences were found in the 30th, 60th and 90th minutes. The anxiety scores of the IG patients dropped more than the CG patients in the 30th, 60th and 90th minutes. The effect of the music was observed to have continued for 30 minutes after the completion of the MT. In the end of the 30-minute MT in which Classic Western music, Classic Chinese music, natural sounds and religious music were played to patients in Taiwan, Lee et al. [2017] found positive effects on serum cortisol levels and anxiety scores. In their study conducted using the music of natural sounds in Iran, Saadatmand, Rejeh, & Heravi-Karimooi, [2013] used the faces anxiety scale and found a significant decrease in anxiety levels [26]. Chlan et al. [2013] found that MT reduced the anxiety of patients with MVS by 36.5%. Lee et al. [2017] conducted a study on the patients with MVS. They had 41 of the patients listen to relaxing music for 30 minutes into IG, mounted headphones without music on 44 other patients into the CG. As a result of the study, they found significant decreases in the anxiety scores of the patients subjected to the MT and those of the group with headphones without music when compared to the control group. Golino et al. [2019] found a significant reduction in anxiety scores of the patients with mechanical ventilation after a 30-minute MT. It has been stated in the studies conducted by using the MT including music selected by the patients themselves that the anxiety levels of the patients have been reduced [17,27]. Their findings concur with the findings of the current study.

The presence of pain sources in patients in ICU with MVS is greater than in other patients. When the changes occurring in the IG and the CG in the 0th, 30th, 60th and 90th minutes were compared, while no statistically significant difference was found in the 0th minute, statistically significant differences were found in the 30th, 60th and 90th minutes. In the IG, pain scores dropped more in the 30th, 60th and 90th minutes when compared to the CG. The effect of the music was observed to have continued for 30 minutes after the completion of the therapy. In a study conducted by Chlan et al. [2013] to evaluate the effect of MT on patients with MVS, corticotropin, cortisol, epinephrine, norepinephrine parameters of the patients were found to have been positively altered by the MT and pain and anxiety in the patients were found to have decreased. The pain score and cumulative opioid consumption after surgery of the group listening to music they selected [28]. The findings of this study support the current study.

When the effect of MT on the SBP values of the IG patients measured in the 0th, 30th, 60th and 90 minutes was evaluated in comparison with the CG patients, a statically significant difference was found for the 60th minute. The SBP values of the IG patients decreased more in the 60th minute than those of the CG students. For the IG patients, statistically significant decreases were observed in their SBP and DBP from the 0th minute to the 60th minute. Lee et al. [2017] found that 30-minute MT in patients had positive effects on SBP, but found no positive effects on DBP. It has been reported that studies on the effects of MT on SBP and DBP in patients with MVS

have positive effects on SBP and DBP [3,16]. The results of these studies indicating the positive effects of MT are similar to the findings of the current study.

When the IG and CG patients' PR changes taking place in the 0th, 30th, 60th and 90th minutes were compared, no statistically significant difference was observed. There are some other studies reporting no changes in the PR as in the current study [13,15,26]. There are some other studies reporting positive effects of music on PR [3,16].

When the IG and control CGs' RR changes taking place in the 0th, 30th, 60th and 90th minutes were compared, a statistically significant difference was found in the 60th minute. The RR of the IG patients decreased more than that of the CG patients in the 60th minute. When the RRs of the IG patients were found to be decreasing up to the 60th minute, they started to increase in the 90th minute. Within the CG patients, a significant difference was found only between the 0th and 60th minutes, the RR started to decrease in the 60th minute. There are some studies reporting the positive effects of MT on the RR of the patients with MVS, supporting the findings of the current study [3,8,16].

When the IG and CG patients' SpO₂ value changes measured in the 0th, 30th, 60th and 90th minutes were compared, no significant difference was found. In some of the studies conducted with patients staying in ICUs with MVS, no significant increase in the SpO₂ values was found [3,16,26]. There are some other studies reporting significant increases in SpO₂ values as a result of MT [13,15].

In this our study, no statistically significant difference was found between SBP, DBP, PR and RR according to the music types of the patients in the IG ($p > 0.05$). Goertz et al. [2011] studied the effect of music therapy on patients' anxiety levels in their study with 197 patients who underwent heart catheterization in Germany. They divided the patients in the IG into two groups. In the study, researchers listened to the music of their choice in one group, while the other group listened the music of their own choice in the other group. As a result of the study, they found that the music preferred by the patients was more effective in decreasing the anxiety level [19]. Lee et al. [2017] in the study of patients with patients who received MVS using music of their own choice; they found that 30-minute MT had positive effects on serum cortisol level, anxiety scores, SBP and PR. Suhartini [2011] examined the therapeutic effect of music on ICU patients receiving MVS in Indonesia and found that Gamelan music suitable for the culture of the local people [29]. Heiderscheit et al. [2014] conducted a randomized controlled study with 373 intensive care patients with mechanical ventilation support. They contacted the patients themselves and their relatives to determine whether the patient-focused music therapy was effective, for the active participation of the patient in music therapy. researchers have investigated the effect of music on reducing patients' anxiety. They evaluated the music preferences of the patients with The Music Assessment Tool (MAT) developed by Chlan and Heiderscheit. In the results of working; they found that patients had a wide variety of music preferences, and that it was necessary to evaluate the music preferences of patients, and it was important that MT was important for patients to participate in their own care when performed with their own preferred music. In nursing care, it is very important to ensure the participation of the patient in their care. Music therapy with the music that is loved by the patients who receive

mechanical ventilation support in intensive care can help their positive feelings develop by thinking about their life in their healthy days.

CONCLUSIONS, STUDY LIMITATIONS, AND SUGGESTIONS

The statistical analysis of the data obtained through the faces anxiety scale and the faces pain rating scale for the IG and CG patients showed no significant difference caused by the MT in the 0th minute, but significant differences were observed to be caused by the therapy in the 30th, 60th minutes and 30 minutes after the completion of the therapy. Significant changes were observed in the SBP and DBP values and respiratory rates measured at different time intervals ($p < 0.05$) within the IG. Moreover, in the SBP and RR values of the IG patients, a significant change was observed in the 60th minute when compared to the CG.

The current study was performed in a 3rd stage anesthesia and reanimation ICU; as the clinic had nine beds and the patient turnover was not high, the patients were included in the study on the grounds of some criteria and the patients were included on a volunteer basis, the data collection process lasted a bit long. The results of the current study cannot be generalized to all ICUs.

As a conclusion;

- ✓ The study can be repeated by measuring changes in stress hormones such as corticotropin, cortisol, epinephrine, norepinephrine, which are biological indicators of pain and anxiety.
- ✓ Music therapy should be used for therapeutic purposes in ICUs.
- ✓ In-service training should be given to nurses to ensure effective implementation of MT in ICUs.
- ✓ MT should be made a subject of nurse training programs.

DECLARATIONS

Conflict of Interest

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